

## REMARKS

Reconsideration of this application is respectfully requested in view of the foregoing amendment and the following remarks.

In the Office Action, claims 1-16, 18-26, 30-31, 33-42 and 44-54 were rejected under 35 U.S.C. § 102(b) as being anticipated by US patent No. 6,291,994 to Kim et al (“Kim”).

Claims 17, 27-29, 32 and 43 were objected to as being dependent upon a rejected base claim but would be allowable if rewritten to include all the limitations of the base claim and any intervening claims.

In this Amendment, claims 1, 44, 49, 52, and 53 have been amended. Accordingly, upon entry of this Amendment, claims 1-54 will still be pending.

The Examiner is thanked for the indication of allowable subject matter. Claims 49, 52 and 53 have been amended to correct typographical errors.

### Rejection of base claims 1, 44 and 53

Independent claims 1, 44 and 53 have each been amended herein to recite a system or method for quadrupole resonance measurement in which noise matching of a receiving system to an antenna is for the *entire duration of* a receiving period [emphasis added to indicate language added in this Amendment]. Support for this amendment can be found, for example in the third full paragraph of page 8.

Nowhere does Kim teach or even remotely suggest a system in which noise matching of a receiving system to an antenna is for the entire duration of the receiving period. The Examiner relies upon column 6, lines 43-49 of Kim to suggest that Kim does disclose this feature. The cited passage states

"This would result in a series of NQR signals which are added and averaged in digital sequence processor 44. This is an application of the conventional technique where target signals are added linearly while noise adds randomly, thereby building a clearly definable pulse by improving the signal to noise ratio (SNR)."

This passage clearly states that the process being used is averaging in a digital signal processor, i.e. is a computer based signal processing technique. This is not a description of a system for matching electronic circuits with each other so as to minimize noise. Rather, the cited passage of Kim discloses a technique for dealing with noise once a signal is acquired.

The teachings of Kim only involve temporarily dampening the Q of the coil prior to the receiving of the signal. The coil then ideally returns to a high Q state prior to the receive period. It does this to achieve the best possible signal to noise ratio. The Examiner is referred to column 4, lines 9 to 13:

"The invention herein effectively reduces the dead time between the end of a transmitted pulse and the beginning of the corresponding weak nuclear induction received signal while maintaining **high-Q** detection receiver characteristics for NQR or NMR applications ....."

The above passage clearly states that during the receive period the antenna is in a high-Q state and that any lowering of the Q must be temporary to have high Q during the receive sequence. This is further supported by the statements at column 14, lines 38 to 43:

"If the Q value in the RF coil circuit were reduced for all system operations it would: i) raise the transmit power required during the pulse on-time provided that the pulse width is greater than  $\tau$ , the ring-down time constant; and ii) lower the receiver sensitivity by diminishing the effectiveness of the RF coil. This is not a desirable state."

Thus, Kim discloses that Q damping results in undesirable lowering of receiver sensitivity, but clearly fails to disclose noise matching of a receiving system to an antenna is for the *entire duration of* a receiving period, as recited in independent claims 1, 44 and 53. At least for this reason, Kim fails to anticipate the independent claims. Similarly, Kim must also fail to

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anticipate all the rejected dependent claims 2-16, 18-26, 30-31, 33-42, 44-52 and 54, which each include by reference the complete combination of features recited in their respective base claims. Applicants therefore respectfully request that the rejection of claims 1-16, 18-26, 30-31, 33-42 and 44-54 under 35 U.S.C. § 102(b) be withdrawn.

In view of the foregoing all of the claims in this case are believed to be in condition for allowance. Should the Examiner have any questions or determine that any further action is desirable to place this application in even better condition for issue, the Examiner is encouraged to telephone applicants' undersigned representative at the number listed below.

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